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COMMONWEALTH OF PENNSYLVANIA.

DEPARTMENT OF HEALTH.

INFORMATION

FOR THE

PEOPLE OF PENNSYLVANIA

WITH REGARD TO THE

INFLUENCE OF VACCINATION

ON

SMALLPOX.

HARRISBURG, PA.:

HARRISBURG PUBLISHING CO., STATE PRINTER.

1907.

THE PENNSYLVANIA LAW FOR THE VACCINATION OF SCHOOL CHILDREN.

Act of the eighteenth day of June, Anno Domini one thousand eight hundred and ninety-five.

"Section 12. All principals or other persons in charge of schools as aforesaid are hereby required to refuse the admission of any child to the schools under their charge or supervision, except upon a certificate signed by a physician, setting forth that such child has been successfully vaccinated, or that it has previously had small-pox.

"Section 13. The health authorities of said municipalities shall furnish to principals or other persons in charge of said schools, and to physicians the necessary certificates or blanks for the uses and purposes set forth and required in sections one, eleven and twelve of this act. The registry of said schools shall exhibit the names and residences of all children or persons admitted or rejected for reasons set forth in this act, and said registry shall be open at all times to the inspection of the health authorities."

(Note.—This act was prepared by a Conference of Health Officials, only a few of whom were physicians.)

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Fig. 1.—Smallpox, formerly called Child-pox, in unvaccinated child.—Before the discovery and general introduction of vaccination, more than ninety-four per cent. of all smallpox deaths were those of little children.

Information for the People of Pennsylvania

WITH REGARD TO THE

INFLUENCE OF VACCINATION

ON

SMALLPOX.

Why do physicians and those to whom is entrusted the protection of the health of the people at large favor and urge vaccination? In order to appreciate the answer to this question certain knowledge is required.

First, with regard to the character and history of smallpox.

Second, with regard to the influence of vaccination upon smallpox.

First, the character of smallpox. The disease itself.

With the one exception of leprosy, smallpox is the most loathsome of all scourges that afflict mankind. The vocabulary of the English language has been exhausted in the attempt to describe its horrors. This will not be attempted in the present pamphlet, but attention is called to the accompanying illustrations which are introduced in order to afford the many physicians who are not familiar with the disease in its varying types and manifestations an opportunity of studying a few of them. It must be remembered however that, hideous as is the aspect of the sufferer at the time of illness, the traces of its ravages which are left for a life time are hardly less distressing. Total blindness is a not uncommon result. Loss of hearing is also a frequent consequence.

The disease is very fatal. In the petechial and hemorrhagic forms (black smallpox) practically all die. In the confluent form (Fig. 8) more than three-fourths die, in the semi-confluent form (Fig. 7) about one-half and in the discrete form (Fig. 5) one-fourth to one-twentieth.

Such then is the disease. An infection which attacks whole populations, loathsome in aspect, inflicting tortures on the living, deadly in its effect, disfiguring and maiming many of those who recover.

Secondly, the history of smallpox.

To grope our way into the dark ages in the attempt to trace references to its existence would be a fruitless task and a waste of time. Our interest in it begins in the seventeenth century when it had become the universal scourge of Europe and America.

In the latter part of the eighteenth and the early part of the nineteenth century it cause about one tenth of all deaths in civilized countries. About 95 per cent. of all the native inhabitants of Europe were attacked by it. In other words only 5 per cent. of the population escaped the infection. The mortality among infants and young children was frightful, so that the disease came to be known as the CHILDPOX. Taking the results of many epidemics together, we find that more than ninety-four per cent. of cases and deaths were of children under ten years of age. It is easy to see that this could hardly have been otherwise, as smallpox is one of the most infectious and contagious of all diseases, and the opportunities for its conveyance were innumerable, while at the same time absolutely no preventive was known. Hence the vast majority of the people being attacked during childhood (Fig. 2) either died, or surviving, became comparatively immune for the remainder of their lives. As each epidemic invaded a community, therefore, it levied its toll on the unprotected new comers.

During the recent epidemic of smallpox in Pennsylvania a family of four, a mother and three children, were taken to the Municipal Hospital in Philadelphia, the mother seriously ill with smallpox. As there was no one to take care of these children, and as they had all been exposed to the disease and were liable to spread the infection, it was absolutely necessary to take them with their mother to the hospital. Two of these children being old enough to attend school had been vaccinated the year before, under the so-called "tyrannical" law requiring teachers to forbid the admission to school of children who could not present a certificate of successful vaccination. The third child being younger, the mother, yielding to the persuasion of foolish neighbors, refused to have vaccinated. The result is shown in the illustration taken from a photograph. (Fig. 1.)

Contrast the beautiful, soft, healthy skins and placid faces of the two children on either side, protected by vaccination, with the horrid condition of the little unvaccinated sufferer between them, evidently in torture from the loathsome eruption and scarcely able to see out of its swollen eyes. This poor little victim of prejudice was infected by its mother and broke out with the disease soon after entering the hospital. The two others remained several weeks in

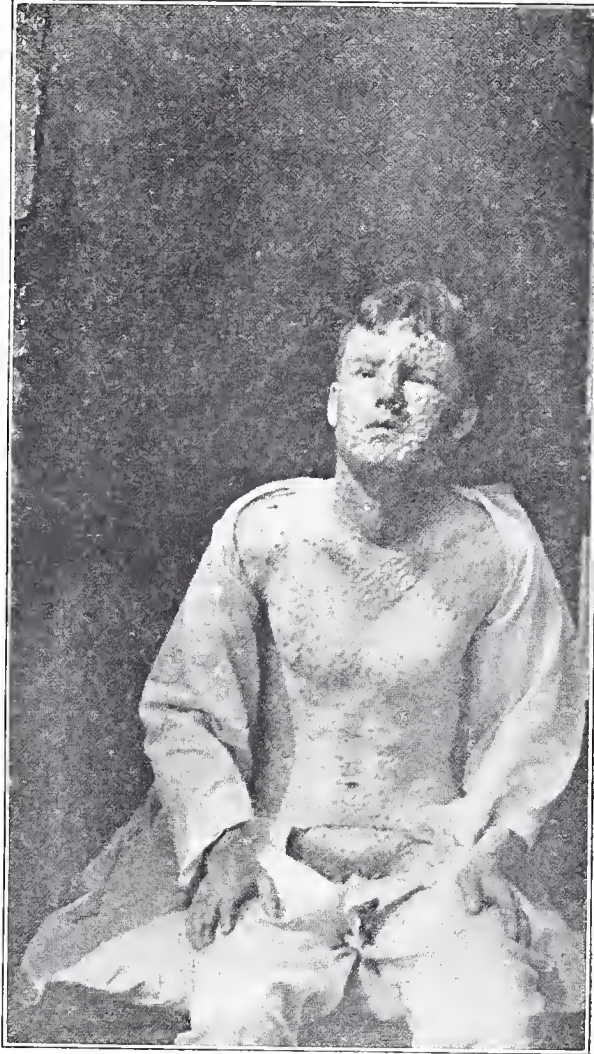


Fig. 2.—Mild smallpox in boy, semi-confluent on face and throat, discrete on body.



Fig. 3.—A mild case of discrete smallpox. Not compelled to go to bed. Hence very dangerous to the community.

the hospital and, although living all this time in an infected atmosphere, continued perfectly well.

A German writer at the end of the eighteenth century thus describes the universal terror which this scourge then inspired.

"One has but to witness the fearful progress of a few cases of this pox as it frequently appears, to appreciate its horrible character. True a few cases terminate favorably (Fig. 3), but in the great majority of instances how terrible are the consequences both to the victim and his household. With dread we view the approach of the disease. Our whole nature rises in revolt against the introduction of the poison into our system. Fever, convulsions and raving delirium bear witness to the internal upheaval. If the patient lives, through much suffering and distress, to the period of pustulation (Fig. 4) fever ordinarily again sets in.

The monstrous swelling of the head (Fig. 6), the closed up eyes (Fig. 7), the often innumerable pustules over the entire body (Fig. 8), each one producing excruciating pain, these and a hundred other tortures are not exceptional but usual. We who are looking on can appreciate the mad ravings, the convulsions, the grinding of the teeth, the blood blisters, the corpse-like stench of the still living body and other horrible external manifestations of this natural pox; but who can paint the inward suffering? Who the agony of a human being whose entire surface, clad as in a black coat of mail (Fig. 9), attacks the inner life, sends the poison to the vitals and at last, after a long and painful struggle, brings the heart to a standstill? The poor children often tear themselves with their nails in their anguish, only to succumb later to apoplexy or strong convulsions or, as often happens, to most distressing suffocation. Such is the course of the natural pox in 400,000 human beings in Europe every year."

Such was the horror excited by the infection as pictured by contemporary observers in all parts of Europe. Epidemics sometimes occurred of a milder type and such seem to be of growing frequency in civilized countries. Whether this is due to a partial immunity owing to the vaccination of successive generations, as has been suggested, there is no means of determining. That it is not due to any considerable extent to the general improvement in sanitary conditions is shown by the fact that other communicable diseases which prevailed side by side with smallpox have not shown a similar decline in mortality. The fact that in countries in which vaccination has been neglected the disease shows all its old time virulence would seem to support the former theory.

Second. The influence of vaccination upon smallpox.

About the beginning of the nineteenth century, when "mens' hearts were failing them for fear" on account of this scourge, suddenly, almost miraculously, it began to decline, and this decline persisted

for decade after decade, until the disease lost its terrors, and the great majority of physicians had never so much as even seen a case.

How was this wonderful change to be accounted for?

To the minds of reasoning men and especially of the medical profession who have been compelled to give this question especial attention there can be but one reply to this inquiry.

It is found in the fact that, near the close of the previous century, an English physician had announced his belief that the inoculation of a human being with the matter taken from a cowpox pustule would render such person incapable of taking smallpox. This process he called vaccination because the matter was taken from a cow (*vacca* in Latin) This physician supported his theory by such a mass of evidence that he compelled the attention of the civilized world and the practice spread everywhere in Europe and in this country with incredible rapidity. As a result of the comparative disappearance of the disease and forgetfulness of its horrors however, people, physicians even, became careless, so that while seventy years ago it was the exception to find an unvaccinated child, thirty-five years ago not one-half the children were vaccinated. Hence the world was again ripe for the scourge and the world was punished for its neglect by the well-remembered epidemic of 1870-74, which spread consternation throughout all lands.

In Austria in the three years of the epidemic in round numbers 162,000 persons died, victims to its deadly virulence, and in Prussia during the same outbreak, 172,000.

Prussia profited by the lesson and in 1874 passed a compulsory vaccination and revaccination law. Austria failed to do so. The consequence was that in the next twenty years Austria lost 239,800 of her population by smallpox, while Prussia with a population eight millions greater lost only 8,500, making the loss to Austria nearly thirty times greater than that to Prussia.

The greater part of the loss to Prussia took place in the first decade before the full effect of the law was felt. At a later period from 1886 to 1896 the smallpox deaths in Prussia amounted to less than 1,000 while those in Austria reached 75,590 or seventy-five times as many. Since the passage of this law, epidemics of smallpox have been unknown in the German Empire. But as she is surrounded by nations who are careless in this regard, the infection constantly crosses her borders. In the year 1897 there were but five deaths from this disease in that great empire of 54,000,000 population. The disease has ceased to be dreaded, so that smallpox hospitals are considered a useless expense, and in Berlin have been entirely abandoned, the death rate having fallen to one in ten million of the inhabitants. In England on the other hand, where a beneficent law has been to a considerable extent invalidated by the per-

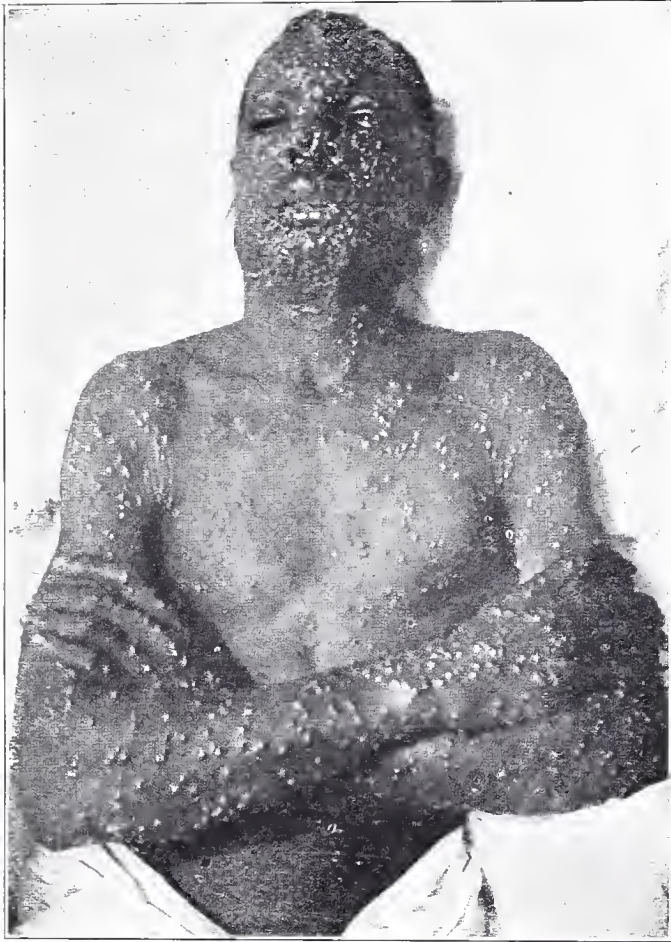


Fig. 4.—Discrete smallpox. Mild epidemic.



Fig. 5.—Case of discrete smallpox in mild epidemic. Characteristic eruption on palms of hands. Drying up.



Fig. 6.—A common variety of mild semi-confluent smallpox.



Fig. 7.—Well developed case of semi-confluent smallpox. Occuring in mild epidemic.

nicious activity of anti-vaccinationists, in twenty-two years 21,596 deaths from smallpox have occurred according to their own showing.

For the four years ending with 1897 the following figures were officially reported in four compulsory vaccination countries, and in four non-compulsory countries.

Smallpox cases per million of population.

Compulsory, Germany, 1.1; Denmark, 0.5; Sweden, 2.1; Norway, 0.6.

Non-compulsory, Belgium, 99.9; Russia, 463; Spain, 563; Hungary, 134.3.

During the same period in twelve non compulsory countries, 346,195 deaths from smallpox were actually recorded. In the year 1905, in the city of Valparaiso 11,000 cases occurred with more than 5,000 deaths. During the past year, from January 1 to May 31, in the city of Buenos Ayres, 1,697 persons were smitten with the disease, of whom 534 died. In the city of Mexico during the same period 142 cases occurred with 78 deaths. These instances are mentioned to show that the disease is still a fatal one, and that we possess no assurance that the next epidemic from which Pennsylvania suffers will be as mild as that through which we have just passed. That this epidemic mild as it was, was not to be disregarded is shown from the fact from November 1, 1903, to December 31, 1904, there were reported to the State Board of Health 5,837 cases with 525 deaths.

During the last half of the year 1904, of the 606 deaths from that disease occurring in the United States 404 took place in this State.

From the beginning of the series of outbreaks in December 1898, to the end of the year 1904 the number of persons attacked in Pennsylvania was 21,727 and the number of deaths 1,613. Without claiming that vaccination was the sole factor in the result, it must have been more than a coincidence that during the year 1906, but one death from smallpox was reported in the entire State.

In connection with the question of compulsory vaccination the following letter from the Hon. A. M. Thackara, Consul General of the United States to Germany is of interest, as furnishing the latest data with regard to the presence of smallpox in that Empire.

“AMERICAN CONSULATE-GENERAL,

Berlin, Germany, December 7, 1906.

Samuel G. Dixon, M. D., Commissioner of Health, State of Pennsylvania, Harrisburg, Pa.:

Sir: I have the honor to acknowledge the receipt of your favor of the 14th ultimo, asking for the latest accurate statistics with regard to vaccination and smallpox in the German Empire. As you are doubtless aware, the German laws which have been enacted for the suppression of smallpox have been recognized in many foreign countries as models of their kind. Their provisions both for compulsory vaccination and for the hygienic policing and treatment of smallpox cases are so conscientiously and thoroughly carried out, that the misery and terrors of an epidemic of the dreaded disease are unknown to the present generation. If a case occurs now and then it is usually one that has been imported from foreign countries.

According to the statistics furnished by the Imperial Board of Health, in 1904, the last year for which complete figures are available, there were 189 cases of smallpox in the German Empire, of which 25 were fatal. More than a fourth of the persons afflicted, namely 58 or 28.6 per cent. were of foreign origin.

The great results of the organized efforts which this country is making to stamp out smallpox are clearly shown in the percentage of the death-rate from the disease per 100,000 inhabitants, as compared with other European countries.”

As many of these statistics have been already quoted, it is unnecessary to repeat them. The provisions of the German vaccination law of April 8, 1874 are briefly as follows:

1.—Compulsory vaccination of all infants before the end of the calendar year next succeeding their birth.

2.—Compulsory re-vaccination of all children in their twelfth year (The compliance of parents or guardians with these requirements is enforced by fine or imprisonment.)

3.—Notification of all cases of smallpox to the health authorities.

4.—Power to isolate cases in hospital even if only suspected.

5.—Vaccination and re-vaccination of all persons who have been directly exposed to smallpox, and in some towns isolation in hospitals of all exposed persons until the period of incubation has passed.

The experience of the German army in regard to this question is even more striking than that of the civil population.

Under military discipline the evasions of the law which may sometimes occur in civil life are of course impossible. While the general

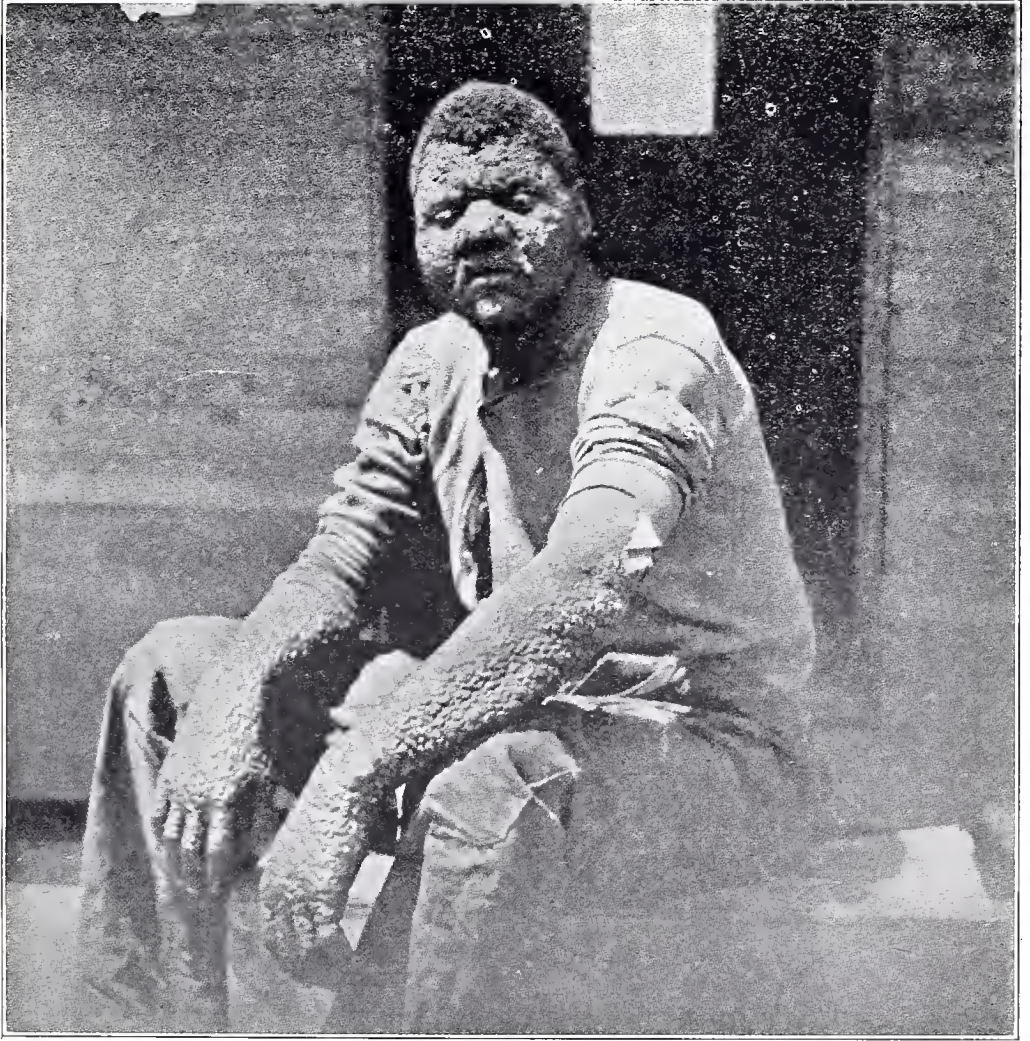


Fig. 8.—A case of confluent smallpox of moderate severity.



Fig. 9.—Confluent smallpox. Early pustular stage. Fatal.—Photographed after death and pustules therefore much shrunken. Occurring in mild epidemic. "Clad as in a black coat of mail."

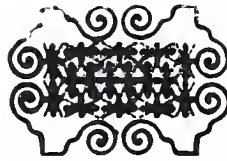
population has been showing an annual mortality of from .02 to 3.6 per 100,000, since the enactment of the law, in the whole period of twenty-four years, only one death from smallpox has taken place in the army.

The immunity afforded by vaccination in many persons lasts throughout life. In others however it does not. For this reason re-vaccination is desirable at least once during the period of growth, and always in the case of exposure or anticipated exposure to smallpox. The protection is often gradually weakened by lapse of time. Hence persons vaccinated in infancy are occasionally attacked by the disease but in so mild and modified a form that the suffering is greatly diminished and the illness shortened and death and disfigurement do not occur. This modified form is known as varioloid.

Occasional re-vaccination as suggested above will however entirely prevent even this mild attack. But it must be borne in mind that it is equally as contagious as true smallpox.

It is not too much to claim on the strength of the evidence above adduced that the influence of vaccination on smallpox is that of a preventive, robbing the scourge of its terrors, and that by re-vaccination the disease can be practically stamped out.

(For the use of the cuts with which this pamphlet is illustrated acknowledgments are due and are hereby rendered to the secretaries of the State Boards of Health of Kentucky and Tennessee and to Drs. Welch and Schamberg, authors of a work on "Acute Contagious Diseases.")



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